

HARD DISK LATCH STRUCTURE

FIELD OF THE INVENTION

The present invention relates to a hard disk latch structure,
5 and particularly to a hard disk latch structure that is easy to install
in or remove from a computer chassis.

BACKGROUND OF THE INVENTION

Following the development of information technology,
10 personal computers have become a standard home appliance. More
and more people have the ability to maintain and upgrade
computer hardware.

Magnetic hard disk, which is a data storage device used with
computers, have constantly multiplied the storage capacity in
15 response to the growing size of single computer files. To handle
large amounts of data storage, adding a plurality of hard disks to a
computer is a common measure.

However, the conventional means for mounting a plurality of
hard disks onto a computer chassis uses screws, which needs tools
20 and is time consuming.

SUMMARY OF THE INVENTION

Accordingly, the primary object of the present invention is to provide a
hard disk latch structure that simplifies the operational procedures of
25 installing or removing a hard disk, enhancing the efficiency of computer
maintenance.

To achieve above objects, the present invention provides a hard disk latch structure comprising a hard disk base frame, a hard disk and a mounting element. The hard disk base frame is generally U-shaped in lateral cross-section and includes a first sidewall, a second sidewall and a top wall.

5 The first sidewall has a first sliding mechanism, a first locking mechanism and a first assembling mechanism. On the top wall of the hard disk base frame, adjacent to both the first sidewall and the second sidewall, at least two receiving plate is integrally formed respectively. The space between the receiving plates defines a hard disk receptacle. Each of the receiving plates

10 includes a sliding groove and an outer sliding surface; each sliding groove is composed of an insertion end and a blocking end.

A hard disk is received within the hard disk receptacle and has at least one screw mounted on each sidewall thereof. Each of the screws is respectively corresponding to one the sliding groove and

15 is capable of sliding from the insertion end to the blocking end.

A mounting element is corresponding to an outer surface of the first sidewall of the hard disk base frame. The mounting element including a second sliding mechanism, at least one blocking object, a handling portion and a second assembling

20 mechanism. The second assembling mechanism corresponding to the first assembling mechanism and being capable of sliding thereon. The second sliding mechanism is corresponding to the first sliding mechanism of the first sidewall and is capable of sliding thereon. The at least one blocking object supports the

25 outer sliding surface of the at least two receiving plate adjacent to the first sidewall, the handling portion is composed of a resilient part and a handle. A second locking mechanism is formed on a

corresponding surface of the resilient part facing to the first sidewall. The handle is pulled to facilitate a sliding motion between the mounting element and the hard disk base frame. The at least one blocking object thereby is urged to slide along one of the receiving plates to lock the screws attached to the hard disk at the blocking ends of the sliding grooves. The second locking mechanism accordingly is resiliently ejected into the first locking mechanism.

To mount a hard disk within the hard disk receptacle on the hard disk base frame, the hard disk is firstly aligned to the receiving plates so that each of the screws thereon respectively corresponds to an insertion end of each of the receiving plates. The hard disk is then inserted into the hard disk receptacle, and at the same time the screws slide along the sliding grooves to the blocking ends thereof. The handle of the handling portion is held to slide the mounting element along the first sidewall of the hard disk base frame so as to urge each of the blocking objects slide on the outer sliding surface of the corresponding receiving plate , and then the blocking objects lock the screws attached on the hard disk at the blocking ends of the sliding grooves.

The above-described hard disk latch structure provides a hard disk latch structure that can be easily installed within or removed from the chassis of a computer. Therefore, it has the advantage of saving operation and maintenance time for disk installing and removing.

The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing.

5 BRIEF DRSCRIPTION OF THE DRAWINGS

Fig.1 is a perspective view of the present invention being mounted within a computer chassis.

Fig.2 is a perspective view of the present invention.

Fig.3A is an exploded view of the present invention.

10 Fig.3B is an exploded view of the present invention from another perspective.

Fig.4A is a perspective view of the present invention being assembled.

15 Fig.4B is a perspective view of the present invention being assembled from another perspective.

Fig.5A is a perspective view of the present invention after being assembled.

Fig.5B is a perspective view of the present invention after being assembled from another perspective.

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BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Fig.1, a preferred embodiment of the present invention as a hard disk latch structure 1 is disposed within the chassis 91 of a computer 9.

25 Referring to Fig.2, which is a perspective view of the present invention, the hard disk latch structure 1 comprises a hard disk base frame 2, a hard disk 5, and a mounting element 4. Referring

to Fig.3A, an exploded view of the present invention, and Fig.3B, an exploded view of the present invention from another perspective, the hard disk base frame 2 is generally U-shaped in lateral cross-section and includes a first sidewall 21, a second sidewall 22 and a top wall 23. The first sidewall 21 has a first sliding mechanism 211, a first locking mechanism 212 and a first assembling mechanism 213; in this preferred embodiment the first sliding mechanism 211 is a groove, the first locking mechanism 212 is a receiving hole, and the first assembling mechanism 213 is an elongated hole. Further, on the outer surface 230 of the top wall 23 of the hard disk base frame 2 and adjacent to both the sidewalls 21 and 22, a pair of receiving plates 3 is integrally formed and projects perpendicularly out from the top wall 23. The space between the four receiving plates 3 defines a hard disk receptacle 30. Each of the receiving plates 3 includes a sliding groove 31 and an outer sliding surface 32; each sliding groove 31 is composed of an insertion end 311 and a blocking end 312.

Referring to Fig.3A and Fig.3B, the hard disk 5 has two screws 53 respectively attached to each of the two sidewalls 51 and 52. The mounting element 4, corresponding to the first sidewall 21 of the hard disk base frame 2, includes a second sliding mechanism 41, two blocking objects 42, a handling portion 43 and a second assembling mechanism 45. In this preferred embodiment, the second assembling mechanism 45 is a locking hook set capable of being slidably snap-fit into the first assembling mechanism 213, which is now an elongated hole; the second sliding mechanism 41 is a block erected from the inner

surface of the mounting element 4 and generally L-shaped in cross-section, which can fit into and slide along the groove of the first sliding mechanism 211. Those two blocking objects 42 respectively correspond to and support against the outer sliding surfaces 32 of the receiving plates 3 adjacent to the first sidewall 21. Further, the handling portion 43 of the mounting element 4 includes a resilient part 431 and a handle 432. A second locking mechanism 44 is integrally formed on the inner surface of the resilient part 431, corresponding and facing to the first locking mechanism 212 on the first sidewall 21 of the hard disk base frame 2; the second locking mechanism 44 is now a hooking piece.

The assembly of the present invention is illustrated in Fig.3A, Fig.3B, Fig.4A and Fig.4B. To mount a hard disk 5 within the hard disk receptacle 30 on the hard disk base frame 2, the hard disk 5 is firstly aligned to the receiving plates 3 so that each of the screws 53 thereon respectively corresponds to an insertion end 311 of each of the receiving plates 3. The hard disk 5 is then inserted into the hard disk receptacle 30, and at the same time the screws 53 slide along the sliding grooves 31 to the blocking ends 312 thereof. The handle 432 of the handling portion 43 is held to slide the mounting element 4 along the first sidewall 21 of the hard disk base frame 2 so as to urge each of the blocking objects 42 slide on the outer sliding surface 32 of the corresponding receiving plate 3.

Referring to Fig.5A and Fig.5B, the sliding movement between the mounting element 4 and the first sidewall 21 eventually makes the blocking objects 42 lock the screws 53 corresponding to the first sidewall 21 at the blocking ends 312 of

the corresponding receiving plates 3. At the same time, the second locking mechanism 44, taking the form of a hooking piece, is resiliently ejected into the first locking mechanism 212, which is now a receiving hole formed on the first sidewall 21, by the
5 resilience of the resilient part 431(as shown in Fig.3A). This locking mechanism is for preventing the mounting element 4 from falling off the hard disk base frame 2.

Referring to Fig.1, the assembled structure of the hard disk latch structure 1 is mounted onto the chassis 91 of a computer 9. In
10 the preferred embodiment, a plurality of mounting hooks 210, 220 extending from the first sidewall 21 and the second sidewall 22, as shown in Fig.4A, which corresponding to hook on a plurality of receiving holes on the chassis 91 of the computer 9 (not shown in the figures). The hard disk latch structure 1 can be
15 straightforwardly mounted onto the chassis 91 by locking the mounting hooks 210, 220 into the corresponding receiving holes.

The above-described hard disk latch structure 1 provides a hard disk latch structure that can be easily installed within or removed from the chassis of a computer. Therefore, it has the
20 advantage of saving operation and maintenance time for disk installing and removing.

Referring to Fig.1, Fig.3A and Fig.3B, to dismount the hard disk 5 from the hard disk base frame 2, just reverse the above mounting procedures. That is, pull the handle 432 so that the
25 second locking mechanism 44 departs from the first locking mechanism 212 by the resilience of the resilient part 431, and then slide the mounting element 4 along the first sidewall 21 of the hard

disk base frame 2. The blocking objects 42 of the mounting element 4 simultaneously slide on corresponding receiving plates 3 so that the corresponding screws 53 are locked at the blocking ends 312 no more. The hard disk 5 is then taken from the hard disk receptacle 30 as the screws 53 thereon slide from the blocking ends 312 to the insertion ends 311 and then leave the sliding grooves 31.

The present invention is thus described, and it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the present invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.